Content Categories System for Body Constructs Applied to Patients with Mastectomy

Running Title: Content Categories for Body Constructs

Marta Segura-Valverde[1], Luis A. Saúl[2] and Enrique Baca-García[1],

[1] Department of Psychiatry, University Hospital Jiménez Díaz Foundation

[2] Department of Personality, Evaluation and Psychological Treatments, National University of Distance Education (UNED)

Correspondence concerning to this article should be addressed to:

Marta Segura-Valverde

Servicio de Psiquiatría, Hospital General de Villalba

Carretera de Alpedrete a Moralzarzal M-608 Km 41.

28400 Collado Villalba Madrid, Spain.

Telephone: +34 910 908 102. Ext: 52142. Fax: +34 910 908 113

Email: msegurav@hgvillalba.es // Alternative email: martasv82@gmail.com

Content Categories System for Body Constructs Applied to Patients with Mastectomy

Running Title: Content Categories for Body Constructs

Abstract

Background and Objectives: Body image is a predictor of psychological adjustment to cancer and a risk factor for depression. Questionnaires to assess body image in cancer patients assume a preconceived concept of body image and do not reflect the patient's subjective experience. This study aims to develop a content categories system for analyzing body constructs in breast cancer patients from their own experience.

Methods: The sample comprised 542 constructs, from 23 patients subjected to surgery (12 mastectomy/ 11 breast-conserving surgery) and 24 controls. Participants were assessed with the Body Grid. Three independent judges coded the constructs elicited following a tentative categories system.

Result: Six categories appeared: Objective Appearance, Esthetics, Function, Strength, Energy and Emotions, with similar distribution in the samples. Objective Appearance, Esthetics and Emotions were the most used. The inter-rater agreement was very good.

Conclusions: These findings highlight the importance of knowing which thematic areas concern the most to each patient and the absent ones in their constructions, in order to focus psychotherapy on the developing of new meanings that allow a more integrated body image.

Key words: Content analysis, personal constructs, body grid, body image

Introduction

Breast cancer is the second most frequent type of cancer in the world, with lung cancer being the most frequent. In Spain, over 22,000 new cases are diagnosed on an annual basis (30% of tumors), and the most frequent age at diagnosis is between 45 and 65 years old (1).

Research on body image (BI) in breast cancer patients is of major importance due to its epidemiological relevance and the psychosocial consequences for women (2, 3) because BI is a predictor of psychological adjustment to the disease (4-6) and a risk factor for depression (7, 8).

BI is defined as the perception an individual possesses of the global body and each of its parts, its movement and limits, and the subjective experience of attitudes, thoughts, feelings, and valuation, as well as the behavior resulting from those cognitions and emotions (9-11). Women's breast is associated with, attractiveness, femininity, sexuality and maternity (3, 12), so disturbances in BI have great psychological impact. There is an increasing interest on the way patients construe their BI related to cancer and its treatments (13-15).

There are several questionnaires to assess body image in cancer patients (16). The main critique to these traditional instruments is that they assume a preconceived concept of BI and do not reflect the patient's subjective experience (17, 18).

Constructivism has proven useful to study the subjective experience of illness (19-21). The key concept of constructivism is the construct. A construct is the unit of meaning to build one's construction of reality. A construct is "a way in which two or more things are alike and thereby different from a third or more things" (22). For example, for Patient A "breast" and "armpit" are alike in that they are both ugly, while they differ from "leg" in that it is beautiful. In this case, ugly – beautiful would be a construct. So, constructs are axis of reference with which we understand the world.

The aim of this research is know the subjective experience of BI of breast cancer patients (mastectomy and breast conserving surgery) through the development of a system of content

categories to classify body constructs. This will allow the identification of the most relevant areas of concern in each group.

Method

Sample

The sample consisted on 542 constructs from the BG of 23 breast cancer patients subjected to surgery (12 mastectomized and 11 breast-conserving surgery) and 24 healthy controls. Patients were treated in the psycho-oncology program of the hospital, in Madrid. Exclusion criteria were oncological disease on stage IV (metastasis, 2 patients) and the lack of capacity to participate. Six patients were excluded: 2 women on stage IV, 2 that refuse to participate due to a bipolar disorder in acute phase, 1 with borderline personality disorder and one with paranoid personality disorder.

The control group was selected from the primary care service of the same geographical area. The selection of the sample was incidental. All of the participants signed an informed consent, approved by the Ethics Committee of the hospital, which stated their voluntary and unpaid participation.

None of the participants had any physical impairment (apart from the injuries resulting of the breast surgery).

Instruments

Body grid technique

The Repertory Grid technique (RG) (20) allows making explicit the constructs that constitute the person's meaning system. The Body Grid (BG) is the body version of this technique. The BG is useful to know the cognitive and emotional features that compose the BI, and allows for the determination of the acceptance of the body and the integration of its parts (17, 23-25).

The RG consists on a data matrix made up by rows, to place the constructs, and columns, to place the elements. A specific grid was developed to assess BI, based on previous works (17, 23).

Eleven elements were selected: *Breast, Armpit, Arm, Skin, Neck, Belly, Hips, Genitals, Legs, Head, Face,* and the terms "*Real Body*", "*Body 5 years before surgery*" for patients, "*Body 5 years ago*" for controls, and "*Ideal Body*". To elicit constructs, each body part was compared with the element "Real Body" with the following question: "Please, think about a characteristic that your (*element; e.g. breast*) has in common with your global body, or that differentiate them". The characteristic that appeared was one pole of the construct, e.g. "mutilated". They were then asked to name the opposite characteristic, e.g. "whole". The questions were written as a questionnaire and filled individually by every participant. Then they had to rate every element in every construct using a seven-point Likert scale. An example of a complete BG is provided in Figure 1.

Figure 1. Example of a Body Grid

				A	B	C	D	E	F	G	H	I	J	K	L	M	N
				REAL BODY	BREAST	ARMPIT	ARM	SKIN	NECK	BELLY	HIPS	GENITALS	LEG	HEAD	FACE	BODY 5 YEARS BEFORE SURGERY	IDEAL BODY
I	WARM	I	COLD	3	1	1	5	3	1	1	5	1	6	1	6	3	7
II	SMOOTH	II	HARSH	5	2	1	5	6	1	1	6	1	6	1	3	4	6
III	THIN	III	FAT	6	4	2	1	6	1	5	2	6	1	4	2	3	2
IV	THICK	IV	FINE	1	4	5	7	2	6	3	6	2	7	4	5	2	6
V	STRONG	V	WEAK	6	2	2	6	6	3	7	4	2	1	3	6	3	1
VI	FLACCID	VI	TENS	1	6	7	2	3	5	1	1	6	7	7	2	3	1
VII	NARROW	VII	WIDE	7	6	1	2	1	3	6	1	1	2	2	3	5	3
VIII	DARK	VIII	LIGHT	4	7	3	3	4	6	3	6	2	6	2	3	4	1
IX	LONG	IX	SORT	1	4	4	1	4	2	4	6	6	1	4	4	1	1
X	LUCID	X	OPAQUE	3	2	6	6	7	2	4	4	6	3	7	1	3	1
XI	EXPERT	XI	INEXPERIENCED	6	6	6	3	7	1	1	3	3	1	7	1	6	1

BG allows quantitative and qualitative analyses. Qualitative analysis may be theory or data driven. Data driven content analysis develops categories from the constructs obtained with the grids according to their area of meaning.

Procedure

The assessing sessions were in groups, each one having four to eight participants, and patients were tested separately from controls. Each participant filled her own BG individually and the researcher supervised the assessment to assure that there was no contamination between the participants.

Once the BGs were answered, we obtained 11 to 15 constructs per participant. All the constructs were listed independently in order of their frequency. Then, the constructs were grouped in areas of meaning until they were reduced to six main categories. The general procedure for content analysis of grids was used: a) if an item was in some way like the first item, the two were placed together under a single category created for them at that moment; b) if an item was different to the first one, they were put into different categories; c) the rest of the items were compared with each of the categories and put into the appropriate category; c) when the item did not fit in any category, a new a category was created. This process continued until all the items were classified (26).

Two other independent judges were asked to reproduce the process of coding the constructs following the same system (27, 28). All the judges had clinical and psychosomatics expertise from different perspectives. The judges put in common the disagreed constructs. Later, they recoded those individually with the new common information, to refine the classification (26, 29).

Data analysis

Statistical analysis were conducted using SPSS® 19 (30) to test the distribution of the categories. A chi-squared test for contingency tables was used for descriptive analysis. The socio-demographic variables were: Marital status, Children Yes/No, Number of children, Education level, Economic level and Labor situation. There were three variables related to the disease: Grade of tumor, Year of surgery and Adjuvant treatment.

Chi-Squared test were used to analyze the distribution of categories. To test the inter-rater reliability, Fleiss' Kappa index was used, for more than two raters (31). This index uses the marginal distributions of the categories of each judge to calculate the probability of casual agreements. Landis' limits (32) were used to value the inter-rater grade of agreement: <0 (No agreement); 0-0.2 (No significant); 0.2-0.4 (Low); 0.4-0.6 (Moderate); 0.6-0.8 (Good); 0.8-1 (Very good).

Results

Descriptive

In the breast conserving group seven patients have had unilateral segmentectomy/cuadrantectomy and four patients lumpectomy. Six of the patients also had lymphadenectomy. Eight patients also had a combined treatment with chemotherapy, radiation and hormone treatment. Two patients had a combination of radiotherapy and hormone treatment, and one patient had chemotherapy and hormone treatment.

In the mastectomy group, there were four cases of radical mastectomy (Halsted), and eight cases of modified radical mastectomy. Ten of the patients had lymphadenectomy. Seven patients have had a combine treatment of chemotherapy, radiation and hormone treatment; two have had chemotherapy and hormone treatment, one patient have had chemotherapy and radiation. One patient has had only chemotherapy. Only one patient had no other treatment after the surgery.

Table 1 shows the distribution of the variables related to the disease in the mastectomy and the breast conserving group.

Table 1. *Distribution of the variables related to the disease*

Variables	Total		Breast Conserving		Mastectomy	
	Fr.	%	Fr.	%	Fr.	%
Tumor grade						
Grade I	0	0	0	0	0	0
Grade II	12	52.2	7	63.6	5	41.7
Grade III	11	47.8	4	36.4	7	58.3
Year of surgery						
2010	11	47.8	6	54.5	5	41.7
2011	11	47.8	4	36.4	7	58.3
2012	1	4.3	1	9.1	0	0
Neo/adyuvant treatment						
No	1	4.3	0	0	1	8.3
Radiation (RT)	0	0	0	0	0	0
Chemotherapy (CHT)	3	13	0	0	3	25
Combined	19	82.6	11	100	8	66.7

Note. Combined: includes any combination of CHT or RT with hormone treatment.

The mean ages were 49.94 (*sd* = 10,12; range 32-69) in the total sample, 51.50 (*sd* = 11.44; range 37-69) in the mastectomy group, 47.55 (*sd* = 8.76; range 34-60) in the breast-conserving group, and 50.25 (*sd* = 10.24; range 32-68) in the control group. There were significant differences in two variables: Children (χ^2 = 7.8; p = 0.02), where 79.2% of the control sample had children, whereas only 41.7% of the mastectomy group and 36.4% of the breast-conserving group had, and Labor situation (χ^2 = 18.93; p = 0.01), where there was more unemployment (45%) in the breast-conserving group than in the other two groups (8.3%). 33% of the mastectomy group had a temporary incapacity for work.

The total number of constructs was 542 (*Mean* = 11.53; *sd* = 0.99), 133 from the mastectomy group (*Mean* = 11; *sd* = 0.00), 126 from the breast conserving (*Mean* = 11.54; *sd* = 0.52), and 283 from the control group (*Mean* = 11.79; *sd* = 1.28). There were significant differences only between the surgery groups (U = 30.00; Z = -2.91; p = 0.02). The number of elements was a constant in every grid (14 elements each).

Content Categories system for Body Constructs (CCBC)

The constructs elicited with the BGs where grouped into six categories, labeled as follows:

1. Objective Appearance: outward and external aspects of physical appearance (size, shape, color, presence of hair…).
2. Esthetics: affective valence and subjective preference, related to the personal concept of beauty.
3. Function: the subjective experience of proper work of the organ, pain and impairment.
4. Strength: the subjective perception of strength and weakness, power, tension, strain…
5. Energy (or Dynamism): the subjective perception of movement, motion, statism…
6. Emotions: feelings, thoughts, sensuality, sexuality, life and death.

Table 2. *Frequency of constructs and percentage of content categories*

Categories	Patients Group						Control Group		Total	
	Mastectomy		Breast conserving		Total Surgery					
	Fr.	%	Fr.	%	Fr.	%	Fr.	%	Fr.	%
Objective appearance	50	37.6	64	50.8	114	44	140	49.5	254	46.9
Esthetics	32	24.1	25	19.8	57	22	57	20.1	114	21
Function	13	9.8	4	3.2	17	6.6	8	2.8	25	4.6
Strength	10	7.5	14	11.1	24	9.3	29	10.2	53	9.8
Energy/Dynamism	6	4.5	4	3.2	10	3.9	7	2.5	17	3.1
Emotions	22	16.5	15	11.9	37	14.3	42	14.8	79	14.6
Total	133	100	126	100	259	100	283	100	542	100

Objective appearance was the most frequent category, followed by Esthetics. These two categories occupied more than 60% of the constructs in all the samples (Mastectomy = 61.7%; Breast-conserving surgery = 70.6%; Control = 69.6%). The third category was Emotions (approximately 15%). No statistical differences were found between the groups ($\chi^2 = 6.17$; $p = 0.29$). However, Function was more frequent in the mastectomy group than in the other two

groups. In the breast-conserving group and the control group Strength was more frequent than Function.

Reliability of the content categories system of classification

Table 3 shows the main results of the three judges in the two codification moments of the CCBC.

Table 3. *Frequency of categories codification of the three judges depending on the codification moment*

Category	Codification 1								Codification 2							
	Mast.		Brest C.		Control		Total		Mast.		Brest C.		Control		Total	
	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%
								Judge 1								
Obj.appareance	49	36.8	63	50	138	48.8	250	46.1	50	37.6	63	50	139	49.1	252	46.5
Esthetics	32	24.1	25	19.8	57	20.1	114	21	32	24.1	25	19.8	57	20.1	114	21
Function	11	8.3	3	2,4	8	2.8	22	4.1	13	9.8	5	4	8	2.8	26	4.8
Strength	12	9	14	11.1	33	11.7	59	10.9	10	7.5	14	11.1	30	10.6	54	10
Dynamism	7	5.3	6	4.8	6	2.1	19	3.5	6	4.5	4	3.2	7	2.5	17	3.1
Emotions	22	16.5	15	11.9	41	14.5	78	14.4	22	16.5	15	11.9	42	14.8	79	14.6
Total	133	100	126	100	283	100	542	100	133	100	126	100	283	100	542	100
								Judge 2								
Obj.appareance	43	32.3	59	46.8	127	44.9	229	42.3	50	37.6	63	50	139	49.1	252	46.5
Esthetics	32	24.1	25	19.8	61	21.6	118	21.8	32	24.1	25	19.8	57	20.1	114	21
Function	17	12.8	11	8.7	14	4.9	42	7.7	13	9.8	5	4	8	2.8	26	4.8
Strength	12	9	12	9.5	31	11	55	10.1	10	7.5	14	11.1	30	10.6	54	10
Dynamism	5	3.8	4	3.2	7	2.5	16	3	6	4.5	4	3.2	7	2.5	17	3.1
Emotions	24	18	15	11.9	43	15.2	82	15.1	22	16.5	15	11.9	42	14.8	79	14.6
Total	133	100	126	100	283	100	542	100	133	100	126	100	283	100	542	100
								Judge 3								
Obj.appareance	58	43.6	61	48.4	157	55.5	276	50.9	50	37.6	62	49.2	140	49.5	252	46.5
Esthetics	30	22.6	25	19.8	56	19.8	111	20.5	33	24.8	25	19.8	58	20.5	116	21.4
Function	3	2.3	2	1.6	8	2.8	13	2.4	9	6.8	3	2.4	7	2.5	19	3.5
Strength	8	6	11	8.7	17	6	36	6.6	8	6	14	11.1	30	10.6	52	9.6
Dynamism	4	3	5	4	5	1.8	14	2.6	5	3.8	5	4	7	2.5	17	3.1
Emotions	30	22.6	22	17.5	40	14.1	92	17	28	21.1	17	13.5	41	14.5	86	15.9
Total	133	100	126	100	283	100	542	100	133	100	126	100	283	100	542	100

Note. Mast.: mastectomy; Breast C.: breast-conserving surgery. Obj.appareance: Objective appearance.

After the first individual codification, the level of concordance was very good (0.85). Once the disagreements were put in common, the level of agreement was excellent (0.962). Table 3 shows Kappa indices in the total sample of constructs. Table 4 shows Kappa indices for every category of the classification system.

Table 4. *Kappa indices between pair of judges on codification moments 1and 2.*

	Codification 1				Codification 2			
Pairs of judges	Kappa	Std. error [a]	T. aprox[b]	Sig. aprox	Kappa	Std. Error	T. aprox	Sig. aprox
Judge 1-Judge 2	0.88	0.02	37.96	<0.001	1.00	0.00	41.87	<0.001
Judge 1-Judge 3	0.76	0.02	30.92	<0.001	0.92	0.01	38.19	<0.001
Judge 2-Judge 3	0.70	0.02	29.70	<0.001	0.92	0.01	38.19	<0.001

a. Assuming alternative hypothesis
b. Using asymptotic standard error based on null hypothesis

In the first codification, the level of concordance was good in all cases ($0.60 \leq K \geq 0.80$). After the second codification, concordance was excellent ($0.80 \leq K \geq 1$; $p < 1$).

Table 5. *Kappa indices of inter-rater agreement on both moments of codification based on content categories*

	Codification 1					Codification 2				
				Confidence interval 95%					Confidence interval 95%	
Category	Fleiss*	Std. Error	Z	Lower limit	Upper limit	Fleiss*	Std. Error	Z	Lower limit	Upper limit
Total	0.78	0.01	56.51	0.76	0.81	0.95	0.01	68.24	0.92	0.97
Obj.Appearance	0.81	0.07	10.76	0.66	0.96	0.95	0.07	12.62	0.80	1.00
Esthetics	0.80	0.06	13.00	0.68	0.92	0.94	0.06	15.35	0.82	1.00
Function	0.54	0.07	7.27	0,39	0.68	0.90	0.07	11.88	0.75	1.00
Strength	0.75	0.06	11.78	0.62	0.87	0.99	0.06	15.63	0.86	1.00
Dynamism	0.68	0.08	8.05	0.52	0.85	0.96	0.08	11.45	0.79	1.00
Emotions	0.84	0.06	13.90	0.73	0.96	0.93	0.06	15.25	0.81	1.00

* all results were significant for $p < 0.001$

Discussion

The aim of this research was to develop a tentative system of content categories to classify body constructs, based on data collected from a sample of breast cancer patients subjected to surgery, and a healthy control group, and to identify the most relevant areas for each group.

The developed CCBC showed six categories: Objective appearance, Esthetics, Function, Strength, Dynamism/Energy and Emotions. The similarity in the distribution of the categories between the patients groups and the healthy controls suggests a similar construction of the BI in the three groups. These results match with the idea that mastectomized and breast conserving surgery patients construe their body image in a similar way as healthy women do (33, 34). Nevertheless, in our sample there were some clinical differences between mastectomy and breast conserving surgery in the importance of the Function category. The relevance of function in mastectomized patients may be explained because the complete loss of the breast implies a greater impairment in the idea of feminity, attractiveness, maternity or sexuality (2, 4, 12).

There was a greater agreement among the judges in the second codification. In the first moment, the level of agreement was good for all categories except for Function, where it was moderate. After the second codification, the level of agreement was very good, even for Function. It would be interesting to explore the meaning of this category for the judges, in order to improve the creation of common criteria and definitions. We have followed the standard steps for developing content systems from raw data from a constructivist approach using grids (26). This approach focuses on proving the reliability more than on the validity of the systems, given that they are not based on a priori theoretical framework (26, 29).

Our system partially coincides with the one created by Weber (24, 25, 35) for hematological patients. The two systems include Function, Strength, Dynamism and Emotions. In our system, the category Control does not exist. We separated objective and subjective

aspects of the appearance because of their frequency and the importance that the participants conceded to them. In our samples of breast cancer patients, Objective appearance and Esthetics were the most extended categories. In Weber's they were the less extended (35, 36). This difference may be explained because of the use of external body parts as elements. Also it is important to note that in breast cancer patients the injuries (scars, mutilation…) are extremely visible. In both studies, Emotions and Strength occupied intermediate places in the distribution and Dynamism was the less extended area. The novelty of our system is that it is the first that uses the BG with breast cancer patients and with a healthy sample.

There are some methodological limitations: incidental selection of the sample, small sample size, the bias because the patients were from a psycho-oncology program and, the group application of the BG. Patients were separated by the type of surgery they had (mastectomy/breast conserving). Future research should include the comparison of patients by specific type of mastectomy and by adjuvant treatment (chemotherapy, radiation, hormones), as well as the relationship between the categories and psychological adjustment.

Nevertheless, our results showed that mastectomized patients have a clinical specific concern of the functional aspects of their BI. Therefore, most of the women with mastectomy will benefit with cognitive-constructivist techniques focused on integrating the impact of the loss of function and expanding their subjective meaning of BI with other areas (strength, dynamism). From a clinical perspective, the improvement of BI will help the patient to better adjust to the disease and its treatment, and it will prevent de development of other psychopathology, like depression.

New research with larger samples is needed to confirm that the use of such techniques will be useful for the patients in terms of faster restoration of the well-being and self-esteem associated to their BI.

Acknowledgments

We would like to thank David Pineda Sánchez for his help with the statistical treatment of the data, and Yenia Zaba for language and writing assistance.

References

1. AECC. Guía de preguntas frecuentes para pacientes con cáncer de mama 2012 [cited 18 - 07 - 2012]. Available from: https:\\http://www.aecc.es/SobreElCancer/CancerPorLocalizacion/CancerMama/Paginas/cancerdemama.aspx.
2. Manos D, Sebastián J, Bueno MJ, Mateos N, De la Torre A. Body image in relation to self-esteem in a sample of Spanish women with early-stage breast cancer. Psicooncología. 2005;2:103-116.
3. Sebastián J, Manos D, Bueno MJ, Mateos N. Imagen corporal y autoestima en mujeres con cáncer de mama participantes en un programa de intervención psicosocial. Clin Salud. 2007;18(2):137-61.
4. Carver CS, Pozo-Kaderman C, Price AA, Noriega V, Harris SD, Derhagopian RP, et al. Concerns about aspects of body image and adjustment to early stage cancer. Psychosom Med. 1998;60(2):168-74.
5. Ganz PA, Desmond KA, Belin TR, Meyerowitz BE, Rowland JH. Predictors of sexual health in women after a breast cancer diagnosis. J Clin Oncol. 1999;17(8):2371-80.
6. Ganz PA. Psychological and social aspects of breast cancer. Oncology. 2008;22:642-53.
7. Noles SW, Cash TF, Winstead BA. Body image, physical attractiveness, and depression. J Consult Clin Psychol. 1985;53:88-94.
8. Andritsch E, Dietmaier G, Hofmann G, Zloklikovits S, Samonigg H. Global quality of life and its potential predictors in breast cancer patients: an exploratory study. Support Care Cancer. 2007;15(1):21-30.

9. Cash TF, Pruzinsky TE. *Body images: Development, deviance, and change*. New York: The Guilford Press; 1990.

10. Raich R. Imagen corporal. *Conocer y valorar el propio cuerpo*. Madrid: Pirámide; 2000.

11. Thompson JK. *Body image disturbances: Assessment and treatment*. In:Press P, ed. New York: Pergamon Press; 1990.

12. Santos DB, Ford NJ, Dos Santos MA, Vieira EM. Breast cancer and sexuality: the impacts of breast cancer treatment on the sex lives of women in Brazil. Cult Health Sex. 2014;16(3):246-57.

13. Lane LG, Viney LL. The Effects of Personal Construct Group Therapy on Breast Cancer Survivors. J Consult Clin Psychol. 2005;73(2):284-92.

14. Rosenblatt L. Being the monster: Women's narrative of body and self after treatment for breast cancer. Med Hum. 2006;32:53-6.

15. Rhondali W, Chisholm GB, Filbet M, Kang DH, Hui D, Fingeret MC, et al. Screening for body image dissatisfaction in patients with advanced cancer: a pilot study. J Palliat Med. 2015;18(2):151-6.

16. Annunziata MA, Giovannini L, Muzzatti B. Assessing the body image: relevance, application and instruments for oncological settings. Support Care Cancer. 2012;20:901-7.

17. Weber CS, Bronner E, Thier P, Schoeneich F, Walter OB, Klapp BF, et al. Body experience and mental representation of body image in patients with haematological malignancies and cancer as assessed with the Body Grid. Brit J Med Psychol. 2001;74(4):507-21.

18. Turpin M, Dallos R, Owen R, Thomas M. The meaning and impact of head and neck cancer: An interpretative phenomenological and repertory grid analysis. J Constr Psychol. 2009;22(1):24-54.

19. Cipolleta S, Consolaro F, Horvath P. When health is an attitudinal matter: a qualitative research. J Humanist Psychol. 2014;54(4):391-413.

20. Fransella F, Bell R, Bannister D. *A manual for repertory grid technique*. 2nd ed. Chichester, UK: John Wiley & Sons; 2004.

21. Neimeyer RA. Enfoques constructivistas de la medida del significado. In: Neimeyer G, ed. Evaluación constructivista. Barcelona: Paidós; 1996. 6-9.

22. Kelly GA. *The Psychology of Personal Constructs*. Nueva York: Norton (Reimpression Routledge, London, 1991); 1955.

23. Borkenhagen A, Klapp BF, Brähler E, Schnoeneich F. Differences in the psychic representation of the body in bulimic and anoretic patients: a study with the body grid. J Constr Psychol. 2008;21:60-81.

24. Weber CS, Thier P, Walter OB, Klapp BF. Characteristics of the body image of patients with haematological malignancies and cancer ilustrated by a case study. In: Klapp BF, Jordan J, Walter OB, eds. *Role Repertory Grid and Body Grid - Construct Psychological Approaches in Psychosomatic Research*. Frankfurt: VAS - Verlag Akademische Schriften; 2004.

25. Weber CS, Fliege H, Arck PC, Kreuzer KA, Rose M, Klapp BF. Patients with haematological malignancies show a restricted body image focusing on function and emotion. Eur J Cancer Care. 2005;14:155-65.

26. Jankowicz D. *The easy guide to repertory grids*. Chichester: John Wiley; 2004.

27. Viney LL. The assessment of psychological states through content analysis of verbal communications. Psychol Bull. 1983;94:542-563.

28. Krippendorf K. *Content analysis. An introduction to its methodology*. Thousand Oaks: Sage; 2004.

29. Green B. Personal construct psychology and content analysis. Pers Constr Theor Pract. 2004;1:82-91.

30. IBM. Statistical Package for Social Sciences version 19.0 (SPSS 19.0). Chicago; 2010.

31. Fleiss JL. *Statistical methods for rates and proportions*. New York: John Wiley; 1981.

32. Landis JR, Koch GG. The measurement of observer agreement for categorical data. Biometrics. 1977;33:159-74.

33. Segura-Valverde M, García-Nieto R, Saúl LA. Imagen corporal y autoestima en mujeres mastectomizadas. Psicooncol. 2014;11(1):45-57.

34. Vázquez-Ortiz J, Antequera R, Blanco Picabia A. Ajuste sexual e imagen corporal en mujeres mastectomizadas por cáncer de mama. Psicooncol. 2010;7(2-3):433-51.

35. Weber CS, Bronner E, Shoenninch F, Walter OB, Klapp BF. Which constructs do the patients use? A categorical system for the analysis of body grids. In: Fisher J, Cornelius NI, eds. *Challenging the boundaries PCP perspectives for tyhe new millenium*. Farnborough, U.K.: EPCA Publications; 2000.

36. Weber CS, Bronner E, Thier P, Kingreen D, Klapp BF. Body construct systems of patients with haematological malignancies. In: Scheer JW, ed. *The person in society: challenges to a constructivist theory*. Giesen, Germany: Psychozocial-verlag; 2000.